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On the road to recovery

Stiekema, Anna Petronella Maria

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CHAPTER 7

Summary and discussion

SUMMARY OF FINDINGS

In recent decades, residential patients with severe mental illness (SMI) have benefited the least from innovations in mental health care, where the focus is mainly on outpatients¹. In order to move forward, a better understanding of the clinical impediments for recovery as well as the potential of recovery-oriented interventions for residential patients is necessary. To this end, we have investigated the structure, longitudinal course and impact of negative symptoms on functioning and quality of life (*chapters 2 and 3*), the putative effect of Cognitive Adaptation Training (CAT) on functioning, empowerment and quality of life in this population (*chapters 4 and 5*) and the effect of a lifestyle intervention on psychosocial well-being in residential settings (*chapter 6*). In the current chapter a summary of the findings will be discussed as well as the scientific and clinical implications of these studies.

DISENTANGLING NEGATIVE SYMPTOMS

Negative symptoms, such as blunted affect, alogia, anhedonia, asociality and avolition/apathy are enduring symptoms that interfere with everyday functioning²⁻⁴. Their heterogeneity hampers treatment development, due to which the relief of negative symptoms remains an unmet need. There is ample evidence for a division of negative symptoms into two subdomains, social amotivation (SA) and expressive deficits (ED), in patients in the early phase of illness. This division provides treatment development with a new direction, as these two domains may prove to be differentially responsive to treatment⁵. However, it was unclear whether the domains could also be distinguished in patients with a longer duration of illness. Therefore, we aimed to replicate this division into two subdomains in patients with long-term psychotic disorders and investigated the relationship of SA and ED with overall functioning, depressive symptoms and quality of life in *chapter 2*. By means of confirmatory factor analysis on previously identified items of the Positive and Negative Syndrome Scale (PANSS)⁶, the subdomain structure was indeed replicated in a large group (N=1157) of patients with a duration of illness of on average 18 years. Moreover, we found that both SA and ED were associated with a global measure of functioning. The domains were also differentially related to outcome; SA was related to depression and quality of life, while higher ED was related to residential living status. Furthermore, we found that SA was related to symptomatology, while ED was related to level of impaired cognition and disability. In summary, the findings described in *chapter 2* led us to suggest that SA is predominantly related to social-emotional aspects of functioning and that ED is particularly related to aspects of everyday functioning. Thus, this subdivision of negative symptoms may be useful for research purposes and provide a valuable additional tool in clinical practice and treatment development of patients with a severe course of illness.

The longitudinal course of SA and ED has only been addressed in a few studies to date. These studies do not allow for clear conclusions due to their mixed results⁷⁻⁹. To contribute to the understanding of the longitudinal course of SA and ED, we investigated in *chapter 3* i) whether SA and ED levels changed over the course of six years, ii) whether study entry levels of SA and ED could predict outcomes six years later and iii) whether subgroups following differential courses of SA and ED over a period of six years could be identified using a trajectory analytic approach. We further aimed to examine iv) the relationship between the subgroups within SA and ED with a different course and functioning and quality of life. First, we showed that both SA and ED show a small but significant decrease in severity of time. Second, we showed that study entry levels of SA, but not ED, were related to global and social functioning and quality of life six years later. Third, we identified a large group (approximately 60% of the patients) with constant low levels of symptoms within both subdomains. Furthermore, in both subdomains, two subgroups with a decreased course or an increased course (approximately 15% each) were identified. In addition, within SA a small group that also showed decreased symptoms over time but a higher symptom level was found (6%) and within ED a small group showed stable high symptom levels (6%). The subgroups did not differ with regard to their average duration of illness. The subgroups within SA showed a differential relationship with global and social functioning, engagement in work or study and quality of life over the course of six years. Within ED, the subgroups were differentially related to global functioning. The difference between the low ED and high ED group was borderline significant for the percentage of patients living independently. In general, the low SA and low ED groups showed the most favorable course of outcomes compared to the other groups within that subdomain.

In summary, the results from *chapter 2* expand the evidence for the subdivision of negative symptoms in SA and ED in patients in the early phase of illness, by showing that the subdomains can also be distinguished in patients with a severe course of illness. Furthermore, we found that these subdomains are cross-sectionally associated with different outcomes. The results of *chapter 3* suggest that, in addition to the heterogeneity in symptom presentation, there is a greater variability between patients with regard to the course of negative symptoms than was previously assumed, which is important for predicting long-term functioning and quality of life.

REDUCING THE IMPACT OF COGNITIVE DEFICITS

Besides investigating the structure and impact of negative symptoms, we also aimed to contribute to evidence-based, practical methods for supporting residential patients with their everyday functioning. Cognitive Adaptation Training (CAT) is a practical, yet theory-driven psychosocial intervention that considers the cognitive abilities of the patients and may be feasible in a residential setting. CAT is a compensatory approach

that aims to reduce the impact of cognitive deficits on basic daily tasks. In earlier studies with CAT outpatients, CAT was given by a psychologist who visited the patients at home¹⁰⁻¹³. Because in residential facilities the psychiatric nurses usually provide support with basic activities of daily living, we investigated in a pilot study whether CAT was suitable as a nursing intervention for residential patients. The results of this pilot study are described in *chapter 4*. We found that patients who received CAT in addition to their usual treatment showed a trend towards functional improvements after eight months compared to patients who received treatment-as-usual only. Furthermore, residential patients receiving CAT were significantly more engaged in work-related activities (e.g. work projects on site) from the tenth month onwards. From this study we concluded that CAT as a nursing intervention is feasible and that residential patients can benefit from CAT. However, since this was a small, exploratory study, a larger randomized controlled trial (RCT) is necessary to confirm these results.

Therefore, we designed a multicenter RCT based on the pilot study, which is currently being conducted at long-stay departments from three institutions in the Netherlands (Lentis Psychiatric Institute, Dijken Duin Psychiatric Institute and GGZ Drenthe). In *chapter 5*, we describe the rationale and study design of this RCT. An important consideration in the study design was the continuity and implementation of interventions, because previous CAT studies have shown that ongoing support is necessary for maintaining the made improvements^{10,14}. In order to promote the integration of CAT into daily working routine and thereby ensuring the continuity of the interventions, CAT was set up as a team intervention in which all nurses of the experimental team were trained in CAT. Another important consideration was the duration of the study. Especially in residential patients, recovery processes are thought to be slow¹⁵. Our pilot study indeed showed that significant differences between CAT and the control group were only found after 10 months, even though the intervention had a duration of eight months. This is longer in comparison to CAT outpatient studies in which significant improvements were detected on global measures of functioning after six months¹² or at the end of a 9-month period¹¹. Therefore, we set the initial study period of the CAT RCT at 12 months. Furthermore, follow-up measurements in the CAT group up take place up to 24 months.

In sum, the results of the CAT pilot study in *chapter 4* show promise for CAT as a nursing intervention for improving everyday functioning of residential patients with SMI. If our RCT, described in *chapter 5*, indeed confirms this in a larger group of patients, CAT may fulfill the need for a practical intervention contributing to the functional recovery and well-being of residential patients.

THE HEALTH ENVIRONMENT OF RESIDENTIAL FACILITIES

Finally, this dissertation describes the psychosocial effects of the Effectiveness of Lifestyle Interventions in PSychiatry (ELIPS) study in *chapter 6*. This large (N=814), multicenter

(29 teams) study primarily aimed to reduce the increased risk of cardiometabolic syndrome. Cardiometabolic syndrome consists of risk factors for cardiovascular diseases, which are large part responsible for the 13–24 years decrease in life expectancy compared to the general population^{16–19}. The lifestyle intervention was designed to change the obesogenic environment (i.e. limited opportunities for and encouragement of exercise, abundant provision of snacks and unhealthy meals) and to train the staff to stimulate healthy behaviors of their patients. The intervention aimed to create sustainable improvements using a small change approach. Besides somatic outcomes, psychosocial outcomes were of interest because of the relationship between physical and mental health^{20–23}. Furthermore, lifestyle interventions have shown to influence psychosocial factors in the general population^{24–26}. The results of the EUPS intervention on these secondary outcomes are described in *chapter 6*. Contrary to our hypothesis, we found that the intervention did not lead to improvements in psychosocial well-being compared to standard care after 12 months. Instead, a slight reduction in quality of life was observed in the intervention group, as well as a small increase of depressive symptoms. We have suggested that these differences may be a result of non-optimal randomization, as the control group and intervention group showed differences on outcome measures at study entry. The reason for not using baseline scores as a covariate in our analysis to control for these differences, was to be able to test the hypothesis that differences between the groups would emerge during the implementation phase, the period from baseline to the measurement at three months. Furthermore, the differences in baseline scores were in favor of the intervention group, whose outcomes were already remarkably good at baseline, leaving little room for improvements and making a decrease in outcomes more likely than an increase (regression towards the mean).

Although the changes were small, it is nevertheless possible that the lifestyle intervention has negatively impacted psychosocial well-being. We can only speculate about the reasons for this adverse effect, but a grown awareness of the risks of an unhealthy lifestyle in combination with difficulties with changing health behaviors could be a possible explanation. For example, patients may have had difficulties refraining from snacks or exercising more despite the increased focus on changing these behaviors, possibly leading to a feeling of failure. Furthermore, some nurses were hesitant to discourage patients to eat snacks or to change the provision of foods. Some nurses felt that they would take away one of the few things that the patients still enjoy, or may even have trouble with adopting a healthy lifestyle themselves.

IMPLICATIONS FOR CLINICAL PRACTICE

As outlined in chapter 1, we aimed to address several of the factors that may influence the recovery process of residential patients. The recovery model implicates that there

is more to recovery than merely ‘curing’ symptoms, as symptomatic recovery is not always possible and is not necessarily accompanied by improvement of other aspects of recovery. Recovery encompasses community recovery as well, which refers to aspects such as housing, work, study and recreational and social activities in the community, and personal recovery, referring to a sense of control over one’s life and the over the ability to live a meaningful life^{27,28}. Recovery of daily functioning can be added to the abovementioned three facets of recovery, referring to the preferred daily routine and caring for oneself and others²⁹. Thus, the recovery model emphasizes adaptation to and dealing with the consequences of the illness in order to lead a satisfactory life, based on individual goals and wishes³⁰.

DISENTANGLING NEGATIVE SYMPTOMS

Even though symptoms are not the mainstay of this approach to recovery, severe negative symptoms can interfere substantially with rehabilitation efforts³¹. Negative symptoms may need to be addressed in order to make progress in recovery processes, especially when they are severe. Thus, clarification of the structure and impact of negative symptoms could guide treatment development in reducing these symptoms, which ultimately may contribute to the recovery process of patients. The clinical implications of the subdomains relate to their possibly different response to treatments, because of a different underlying psychopathology and differential relationships with outcome⁵. Pharmacological studies that have investigated the selective responsiveness of SA and ED are limited in number, and do not yet provide enough information for a conclusion about differential response to treatment^{32,33}. However, some suggestions for targets for psychosocial interventions can be made.

Accumulating evidence suggests that SA stems from deficits in anticipatory pleasure and defeatists’ beliefs^{34,35}. This suggests that challenging and changing these beliefs and learning to anticipate on the experience of pleasurable events could possibly reduce SA. We have suggested that cognitive behavioral therapy may be a suitable intervention in doing so, but their specific effect on SA has yet to be investigated³⁶. A pilot study on the Positive Emotions Program for Schizophrenia (PEPS), aimed at increasing the anticipation and maintenance of positive emotions using group-based exercises by modifying defeatist beliefs, indeed showed improvement of SA, but not ED³⁷. Given that 32 out of 37 patients were living in sheltered housing, PEPS seems to be feasible for residential patients. The upcoming RCT on PEPS will show if the positive results can be maintained compared to a control group, and whether eventual improvements on SA are translated into functional improvement³⁸.

ED has shown to be correlated to neurocognitive deficits^{6,7,39,40}. Because of the relationship of ED with living situation and global functioning, we suggested in *chapter 2* that compensatory strategies such as Cognitive Adaptation Training (CAT)¹¹ or

Cognitive Compensatory Training (CCT)⁴¹ may reduce the impact of these deficits on everyday functioning. Notably, in *chapter 3* we demonstrated that the associations of ED with functioning remained significant, even when controlling for neurocognition. This indicates that a part of the relationship of ED with these outcomes cannot be explained by underlying cognitive deficits as measured with our tests and may thus need a different approach than CAT or CCT. In chapter 3 we therefore suggested that interventions targeting expressive skills such as Social Skills Training^{42,43}, could possibly improve ED. Although there is some controversy on the effectiveness of Social Skills Training, it has shown to be robustly more effective in reducing negative symptoms than other psychosocial interventions⁴⁴ but it is ideally combined with other treatment services such as case management or supported employment⁴⁵.

To summarize, our results indicate that SA is an important treatment target for improving functioning and well-being, consistent with the literature^{34,46–48}. Importantly, our findings have shown that ED is associated with functioning as well despite the focus on SA in the literature, where SA is reported as the most important treatment target⁴⁹ because of its consistently found relationship with outcome. Neglecting this subgroup of negative symptoms may be disadvantageous for negative symptom treatment. Until new studies investigating the effect of treatments on the subdomains separately are available, previous pharmacological and psychosocial intervention studies should retrospectively investigate whether the treatment under study has a selective effect on one of the subdomains³³.

REDUCING THE IMPACT OF COGNITIVE SYMPTOMS

In clinical practice, mental health care professionals lack evidence-based hands-on methods to provide support for residential patients in a recovery-oriented manner⁵⁰. We described CAT as an intervention that may fulfill the requirements for this purpose, supporting recovery of daily functioning. Firstly, CAT provides a systematic assessment of daily activities in everyday life domains. This assessment includes questions which are usually no longer asked about in the day-to-day routine nor spontaneously reported upon by the patients. This can be helpful and surprising at the same time, as it may provide new directions to work on known issues. For example, the fact that one of the patients never left the hospital site was attributed by staff-members to his anxiety, while this person reported during the assessment that the lack of owning regular trousers, instead of sweatpants, was the major problem. Secondly, once areas to work on are evaluated, the CAT manual provides practical guidance on how to use the environmental supports by example interventions per life domain and for each behavior type and level of executive functioning⁵¹. Thus, the staff may, but do not have to come up with interventions on their own. They can choose from interventions that have worked for patients with similar problems and personalize them when necessary.

As mentioned before, previous studies have shown that patients need ongoing support in order to maintain improvements that are made with CAT^{10,14}. CAT is labor intensive due to weekly home visits and when delivered to outpatients it also involves the costs for travel expenses^{13,14}. Therefore, efforts have been made to adapt the original CAT model in such a way that the treatment intensity is reduced^{10,14,52}. For example, the full CAT model was compared to Generic Environmental Supports, which is clinic-based rather than in-home and consists of generic rather than individually tailored supports that patients set up on own¹⁴. Another less labor intensive modification to which CAT was compared is PharmCAT, in which patients received individually tailored interventions that were specifically aimed at medication and appointment adherence¹⁰. CAT was also compared to Cognitive Behavioral Therapy in which the problems related to daily functioning were specifically targeted. In these studies, the full CAT model has been found to be superior in improving functional outcomes compared to these adaptations. However, a modification of the CAT model in which case managers with a rudimentary training in CAT take over from CAT specialists after four months does show promise as a sustainable and less intensive CAT model⁵². The only study not finding superior effects of CAT is a Danish study in which Active Community Treatment (ACT) plus CAT was compared to ACT alone⁵³. Several limitations of this study, such as a small sample size and staff untrained in the CAT method, complicate the interpretation of these results. ACT already being a rich treatment can also be the cause of the lack of additional improvement of CAT over ACT^{53,54}. All in all, these studies indicate that the best results in terms of sustainable functional improvements can be expected with the use of individualized supports that fit the patients' specific needs, and which are set up and evaluated in the patients' home environment¹³.

To conclude, our pilot study revealed that CAT as a nursing intervention is feasible and shows promise for improving everyday functioning, most notably by the increase of engagement in work activities of residential patients. If the results of the RCT indeed show further evidence for the effectiveness in improving functional outcomes (primary outcomes) as well as quality of life and empowerment (secondary outcomes), CAT may fill the need for recovery-oriented methods in the long-term clinical care.

IMPROVING THE HEALTH ENVIRONMENT OF RESIDENTIAL FACILITIES

An important and long neglected area in mental health care was addressed with the ELIPS study, despite the lack of improvements on psychosocial well-being. Lifestyle factors are associated with the dramatically increased prevalence of cardiometabolic syndrome and the risk of cardiovascular disease in the SMI population. Therefore, lifestyle is increasingly seen as an important focus of care for patients with severe mental illness that needs to be addressed by mental health care professionals^{55–58}. The results of the primary outcome (i.e. waist circumference) will have to show whether

the small change approach targeted at the teams and the obesogenic environment has positive effects on somatic health.

Factors related to the study (such as sub-optimal randomization) or the intervention (such as perceived barriers to implementation) as well as the lack of process evaluation prevent drawing firm conclusions on the small deterioration in quality of life and increase in depression in the intervention group as related to the intervention. However, mental health care professionals should be aware of possible adverse effects on mental well-being when addressing lifestyle changes. Struggles with maintaining a healthy lifestyle are all too recognizable for most people. It is even more difficult in SMI patients due to negative symptoms, cognitive deficits⁵⁹ and environmental factors⁶⁰. Thus, the adverse effects can possibly be attributed to an increased awareness of the risks of an unhealthy lifestyle, while at the same time having difficulties with choosing long-term health benefits over the short-term pleasure of unhealthy foods and not having to exercise.

METHODOLOGICAL CONSIDERATIONS

The strengths and limitations of the studies in this dissertation have been addressed in their respective chapters, however, two methodological considerations will be described in more detail here. The first is the issue of process evaluation, and the second involves the measuring of specific, individual goals.

For interventions to be applicable in routine clinical practice, they need to be evaluated in real-world settings (measuring effectiveness), rather than under ideal and controlled conditions (measuring efficacy)⁶¹. Moreover, the individualized approach of CAT, the team approach of ELIPS and the focus on the daily environment in both interventions further argues for a pragmatic approach to the evaluation and measurement of the effectiveness. The external validity of such pragmatic studies is high compared to experimental trials that measure efficacy and of which the principal aim is to establish whether a treatment works in highly controlled settings⁶¹. However, there is a downside of low control over participant compliance and practitioners' adherence to the intervention. For example, limited information on whether the ELIPS intervention was sufficiently implemented and whether this was the case in all teams or participating centers, to what degree patients indeed benefited from the intervention, what their and the staff's views of the intervention are and whether and why certain elements of the intervention worked better than others⁶². Although the primary question of pragmatic trials is not about these aspects but about whether an intervention works in the real-world, it would greatly benefit the interpretation of results if such information was present. This information can be obtained by using treatment fidelity measures or process evaluations in which such aspects are examined⁶³. Moreover, the use of fidelity measures could have supported the fidelity of the implementation⁶⁴. In the ELIPS study we did not use fidelity measures nor a process evaluation. Therefore, we lack specific

information on the degree to which the environment became less obesogenic, why some teams changed more than others, and whether patients indeed made healthier lifestyle choices. This would have been very helpful in interpreting our results, especially since they are opposite to what we expected. In the initial design of the CAT RCT we also did not include process evaluation techniques to investigate these matters. This insight has lead us to include a small evaluation at the end of the 12-month measurement, in which nurses and clinicians who were involved in CAT will be asked about what they thought was helpful (in terms of impact on clients as well as in steps of the intervention process) and what barriers they perceived. Thus, pragmatic trials are useful and necessary, but should include process evaluations to provide important information that can put the results with regard to outcomes in perspective.

Another methodological issue that deserves further attention, is measuring specific outcomes when setting individual goals. With CAT or other individually tailored interventions, goals and needs can vary greatly from person to person. Most outcome measures are global measures that do not always capture the achievement or improvement of specific individual goals. In addition, they are usually not sensitive to smaller scale changes, for example when someone started initiating self-care behaviors rather than only performing these tasks after being prompted by others. With Goal Attainment Scaling (GAS⁶⁵) it is possible to define specific detailed goals with anchors indicating improvement and deterioration compared to the status quo. This would allow for a more personal evaluation of the effectiveness of an intervention. However, difficulties with formulating goals or patients' beliefs on what they can achieve may be a challenge for patients. Furthermore, there is the risk of therapist bias. This occurs when staff members formulate goals so that the chance of achieving goals are high in order to enlarge the effect of treatment⁶⁶. Nevertheless, the use of individualized outcome measures may relate more to the effectiveness of individualized interventions and could appropriate when it comes to recovery-oriented methods (see for examples Swildens and colleagues⁶⁷). In this regard, studies may best measure community and personal recovery by using not only indicators of objective quality of life such as adequacy of housing, friendship, safety, employment and close relationships, but also progress towards personal goals⁶⁸.

FUTURE DIRECTIONS AND FURTHER RESEARCH

FURTHER RESEARCH INTO THE SUBDOMAINS OF NEGATIVE SYMPTOMS

It is evident that more research is necessary that aids clinicians in basing personalized therapeutic decision-making on the level and (expected) course of the subdomains. The discrepancies in the literature with regard to the functional and clinical correlates of SA and ED need to be clarified. The instrument that is used to classify SA and ED could be the source of contradicting results. In *chapter 2*, we elaborated on the difference

between the subdomains derived from the SANS and the PANSS. Whether or not these scales can be used interchangeably, should be examined by investigating the conceptual overlap between the subdomains derived from different scales. Newer scales such as the Brief Negative Symptom Scale (BNSS⁶⁹) and the Clinical Assessment Interview for Negative Symptoms (CAINS⁷⁰) include experience of pleasure versus the expectation of pleasure as well as different items for measuring facial expression, vocal expression and expressive gestures⁷¹. The added value of these newer scales should be investigated⁷¹. Until this has been done, studies using the PANSS as an outcome measure, should (retrospectively) investigate the selective responsiveness of treatments for the subdomains SA and ED³³.

Our results suggest that the heterogeneity in the course of the subdomains should be accounted for in future studies as well, as the subgroups within SA and ED relate differentially to outcomes. Demographic and clinical differences between the subgroups as well as possible causal factors for the change in the decreased and increased groups should also be further unraveled. In both *chapter 2* and *chapter 3*, we suggest that future research with patients with more profound negative symptoms is necessary. The associations that we found in *chapter 2* of this dissertation and in other studies may be biased by a large group of patients that has steady low levels (*chapter 3*).

In *chapter 3*, we have based the course of the subdomains on measurements with three year intervals. These are large intervals, and it could be helpful to use in-the-moment assessments in order to examine under what everyday circumstances negative symptoms are elevated or diminished in day-to-day life⁷². Such momentary assessments have shown that experience of pleasure from activities is intact, and that patients actually enjoy social company even though they report a higher preference for being alone than healthy controls^{73,74}. Information about symptoms, such as social withdrawal, in temporal association to their (social) context could provide the patient with insight and awareness and may be relevant for determining individualized treatment strategies⁷². In a similar vein, it has been shown that diminished expression does not necessarily reflect diminished experience of emotions^{75,76}. Since the subdomains assessed with the PANSS and SANS mainly use observer based ratings for the items involved in SA and ED, further research into the subjective experience of their corresponding symptoms could provide information that can be used for directing treatment of negative symptoms.

Finally, patients can be characterized by predominant SA or ED⁴⁶, but these symptoms tend to co-occur⁴⁰ and may reinforce each other⁷⁷. Further insight in the interaction between SA and ED may provide insight in the relationship with outcomes.

UNCOVERING GOALS, NEEDS AND WISHES

Negative symptoms, cognitive deficits, demoralization, problems in communicative skills, and adaptation to the hospital routine can complicate progress towards recovery.

For rehabilitation methods to be truly recovery-oriented, actual goals of the patient instead of goals set by the mental health professional are essential in triggering stagnated recovery processes and to move forward. Formulating wishes and goals can be an enormous challenge for the majority of residential patients. Thus, being able to use personal wishes and goals as a starting point for support is can be a great challenge for mental health care professionals. Currently, the department of rehabilitation of Lentis and the Hanzehogeschool Groningen are developing a method to translate rehabilitation methods for use in patients in residential settings. An important aspect of this method is guiding professionals in ways to support patients in exploring and defining their personal goals. A recent initiative in the Netherlands, called the Active Recovery Triad (ART; www.art-psy.nl), aims to contribute to optimizing recovery-oriented care in long-term residential patients, by providing a model for care as well as offering practical tools for patients, family, mental health care professionals and managers in mental health care organisations.

CONCLUDING REMARKS

Central to this dissertation are residential SMI patients. They are a vulnerable group of patients for whom research and innovations in care have stayed behind over the last decades. Rehabilitation methods and recovery-oriented care are slowly finding its way into their care provision. In this dissertation, we have addressed only a small number of factors related to recovery processes and more research into these and other aspects is warranted to improve the quality of care and quality of life. With our studies we have contributed to the understanding of negative symptoms. This can be of benefit for efforts to reduce negative symptoms and their impact, by taking into account the relevance of ED for functioning as well as the heterogeneity in the course of SA and ED over time. The impact of cognitive deficits on everyday functioning may be reduced by implementing CAT as we have shown in our pilot study and which is currently being investigated in more detail in a multicenter randomized controlled trial. Lastly, our study on a lifestyle intervention paid attention to the long-neglected lifestyle of SMI patients and their environment in particular. We showed that the small change environmental approach was not sufficient to bring about improvements in psychosocial well-being, but did suggest new starting points for further research. We argue that not only (neuropsychological) diagnostics and treatment of positive symptoms are important in the wellbeing of SMI patients, we also need treatment of negative symptoms and cognitive deficits and significant improvements of the obesogenic environment to support the recovery process of patients with SMI.

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